



TUTORIAL

Logistic Multidimensional Data Analysis

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This tutorial focuses on the analysis of multivariate categorical response variables. For categorical variables, logistic models are most usual. However, having more than one response variable the data and its analysis become complex. In this tutorial, a logistic analysis framework based on dimensionality reduction techniques like principal component analysis, reduced rank regression, and (restricted) multidimensional unfolding for the analysis of multivariate categorical variables is presented. In this framework, the negative log-likelihood is minimized for which a Majorization Minimization (MM) algorithm is used. Special attention is given to biplots for the graphical representation of the results. Theory and applications will be shown in detail. Also, R-software for the analysis of data will be shown.

Content

- Logistic regression models for binary, ordinal, and nominal variables
- Principal component analysis, reduced rank regression, and (restricted) multidimensional unfolding
- Logistic Multidimensional Data Analysis for binary variables
- Logistic Multidimensional Data Analysis for ordinal variables
- Logistic Multidimensional Data Analysis for nominal variables

Keywords: Biplots, Classification, Dimension Reduction, Logistic Regression, Multi-label.